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| 10/810,044 | 03/26/2004 | Rebecca Castle | 2003M001 | 8406 |
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| 09/22/2008 | | | | |
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| MCAVOY, ELLEN M | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/810,044

Applicant(s)

CASTLE, REBECCA

Examiner

Ellen M. McAvoy

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2008.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-16 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-16 are still rejected under 35 U.S.C. 103(a) as being unpatentable over Naitoh et al (6,063,741) in combination with either Iwashita et al (6,139,022) or Iwashita et al (6,325,385).

Applicant's arguments filed 08 July 2008 have been fully considered but they are not persuasive. As previously set forth, , Naitoh et al ["Naitoh"] disclose an internal combustion engine oil composition comprising (1) at least one oil selected from mineral oil and synthetic oil; (2) a molybdenum dithiocarbamate in an amount of about 50 to 2000 ppm by weight when calculated as molybdenum (Mo), relative to the total weight of the engine oil composition; (3) zinc dithiophosphate in an amount of 0.01 to 0.2 weight % when calculated as phosphorus, relative to the total amount of the engine oil composition; and (4) an ashless organic polysulfide compound in an amount of 0.01 to 0.4 weight % when calculated as sulfur, relative to the total amount of the engine oil composition. See column 2, lines 15-60. Applicant's invention differs by applying the engine lubricating oil composition to an internal combustion engine having one or more component parts coated with a diamond-like carbon film or coating. However, such is well-known in the art as set forth in the Iwashita et al ["Iwashita"] references.

The Iwashita references disclose a piston ring for use in internal combustion engines having a gas nitrided layer and a hard film with a thickness of 0.5 to 10 micrometers on the gas

nitrided layer at the outer circumferential surface. The hard-film comprises a diamond-like carbon in which are dispersed carbides of one or more elements. The Iwashita references teach that engines in recent years must meet increased demands for higher output, higher revolutions per minute, longer product service life, and must also comply with stricter exhaust gas emission regulations. As a consequence, the piston rings must operate in harsher operating environments and the diamond-like carbon coating provides the piston ring with increased resistance to scuffing and wear. Thus having the prior art references before the inventor at the time the invention was made it would have been obvious to have lubricated an internal combustion engine containing pistons coated with a diamond-like carbon film with the lubricating oil composition of Naitoh. The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation relied on by the examiner is the disclosure in the applied references to provide internal combustion engines with increased demands of lower friction losses and improved exhaust emission outputs.

Applicant previously argued that there is nothing in either the Naitoh et al. patent and the Walker et al. patent that would lead one to expect that the addition of molybdenum compounds to lubricants for lubricating engines having diamond-like carbon parts would provide any improved fuel economy benefit, relative to less expensive organic friction modifiers, such as glycerol monooleate(GMO). This is not deemed to be persuasive because the fact that applicant

has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). The examiner maintains the position that it is simply not relevant to the examination of this application the fuel economy benefit of another friction modifier such as glycerol monooleate.

Applicant previously argued that a teaching regarding the effect of a lubricant additive on one type of surface cannot necessarily be applied to the lubrication of another type of surface is demonstrated by the data of the present specification which shows that while glycerol monooleate exhibits significant reduction in friction coefficient in a steel on steel lubrication situation, the effect is hardly noticeable in a DLC on DLC lubrication situation, and that the skilled person could not predict whether molybdenum compounds would be effective in reducing the friction of DLC coated surfaces. This is not deemed to be persuasive because, as set forth above, Naitoh teaches lubricating oil compositions containing molybdenum compounds which are suitable for use in internal combustion engines. Naitoh does not specify what metals may or may not be used for the engine parts, but broadly teaches that the lubricating oil compositions can suppress the friction loss in engines such as automotive engines.

Applicant previously argued that in the DLC on DLC case, it is seen that the glycerol monooleate (GMO) has no significant effect on the coefficient of friction. On the other hand, despite the fact that the base level of friction is already very much lower, the molybdenum compound is shown to reduce the coefficient of friction by at least as much, if not more (in percentage terms), than in the steel on steel case. There is also an indication from the data that the reduction in friction coefficient increases with time, compared with the steel on steel case.

This is not deemed to be persuasive because all conventional friction modifiers are not expected to have the same level of effectiveness. Lubricating oil compositions containing molybdenum compounds, such as molybdenum dithiocarbamate, in an amount of 50 to 2000 ppm by weight of molybdenum, are known to be effective as friction modifiers in internal combustion engines as evidenced by Naitoh outlined above. The data set forth in the specification has been carefully reviewed; however, the examiner is of the position that the results presented are not sufficient to rebut the established *prima facie* case of obviousness.

In the response filed 08 July 2008, applicant argues that piston rings for an internal combustion engine coated with a DLC coated surface were not in common use in internal combustion engines as of the filing date of the present application (of 26 March 2004). This is not deemed to be persuasive because the Iwashita et al references were patented well before the filing date of this application (October 2000 and December 2001) which teaches piston rings coated with a diamond-like carbon (DLC) coating. Applicant argues that there is nothing in either Naitoh et al or the Walker et al patent that indicates lubrication of engine components having DLC coated surfaces was contemplated. This is not deemed to be persuasive because engine components during use need to be lubricated and one of ordinary skill in the art would presumably use the same lubricants to lubricate the engine regardless of one new engine part such as a piston ring made from a non-iron material. Applicant's discovery that an oil-soluble organomolybdenum compound continues to function effectively as a friction reducing agent when an internal combustion engine that contains one part having a DLC coating is noted. However, the examiner is of the position that applicant's claims are NOT patentable over the applied prior art references.

Claim Rejections - 35 USC § 103

Claims 1-16 are also still rejected under 35 U.S.C. 103(a) as being unpatentable over Walker et al (6,444,624) in combination with Nakahigashi et al (6,893,720).

Applicant's arguments filed 08 July 2008 have been fully considered but they are not persuasive. As previously set forth, Walker et al ["Walker"] disclose multigrade lubricating oil compositions suitable for the crankcase of internal combustion engines which comprise a basestock containing from 0 to less than 10% of Group I and/or Group II basestocks, a molybdenum additive including molybdenum dithiocarbamates and trinuclear molybdenum compounds that provide not greater than 1000 ppm of molybdenum to the lubricating oil composition, a calcium detergent, a viscosity modifier and one or more other additives. See column 3, line 29 to column 4. Applicant's invention differs by applying the engine lubricating oil composition to an internal combustion engine having one or more component parts coated with a diamond-like carbon film or coating. However, such is well-known in the art as set forth in Nakahigashi et al ["Nakahigashi"]

Nakahigashi discloses an object such as an automobile part, an image forming apparatus part, a bicycle part or other machine parts having a surface entirely or partially coated with a carbon film, typically a diamond-like carbon film, having wear resistance as well as at least one of a lubricity, a water repellency and a gas barrier property. Automobile parts disclosed in Nakahigashi include dampers, hoses, tires as well as automobile valve parts, gears, bearings, and other parts. See columns 3-4. Thus having the prior art references before the inventor at the time the invention was made it would have been obvious to have lubricated an internal combustion engine containing automotive parts coated with a diamond-like carbon film with the

lubricating oil composition of Walker. The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation relied on by the examiner is the disclosure in the applied references to provide internal combustion engines with increased demands of lower friction losses and improved exhaust emission outputs.

Applicant's arguments concerning this rejection are the same as those presented in the rejection over Naitoh in combination with the Iwashita references which have been fully addressed above.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ellen M. McAvoy whose telephone number is (571) 272-1451. The examiner can normally be reached on M-F (7:30-5:00) with alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ellen M McAvoy/

Ellen M McAvoy
Primary Examiner
Art Unit 1797

EMcAvoy
September 17, 2008